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An energy-conserving microprocessor or CPU system comprises keep-alive circuitry operable for performing auxiliary information processing when receiving keep-alive or auxiliary power, and main circuitry operable for performing main information processing only when receiving main power. The keep-alive circuitry renders a CD/DVD player, a hard-disk drive, and/or a network card operable while allowing the main power to be absent. The main circuitry is actuated only when high-computation-power is needed, for instance, at the beginning of booting, or when loading a complex software program or performing complicate computation. In contrast, conventional microprocessors and computers have being designed to be either operable only at full power or inoperable once entered the traditional sleep or standby state. Thus, the energy-conserving microprocessor or CPU system or the energy-conserving method of the same not only renders a computer instantly accessible but eliminates any unnecessary energy waste and annoying noise especially during operations, for the first time.